



Substitute Seq Listing I- 2001.004 US

<110> Schetters, Theodorus P. M.  
Carcy, Bernard P. D.  
Drakulovski, Pascal R.  
Gorenflot, Andre F.

<120> Babesia canis vaccine

<130> I-2001.004 US

<140> 10/087,573

<141> 2002-02-28

<150> EP 01200816.5

<151> 2001-03-06

<160> 17

<210> 1

<211> 1135

<212> DNA

<213> Babesia canis

<220>

<221> CDS

<222> (75)..(500)

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Met Glu Ser Thr Ser Thr Thr Thr Asn Phe Val Ala  
1 5 10

gag aac cgt ccc acc ttt ggt gag acg ttt gat gtg atg agg gaa gct 158  
Glu Asn Arg Pro Thr Phe Gly Glu Thr Phe Asp Val Met Arg Glu Ala  
15 20 25

ttg ctt cgt gta aag tcc tct gaa cgc ttg gca atg ctc aga gcg ctt 206  
Leu Leu Arg Val Lys Ser Ser Glu Arg Leu Ala Met Leu Arg Ala Leu  
30 35 40

gca gga atg tgc ggt cac cgc gtc ctt cct ggc act ggt gct tct gcg 254  
Ala Gly Met Cys Gly His Arg Val Leu Pro Gly Thr Gly Ala Ser Ala  
45 50 55 60

ata gcg gca acg gta acc cca aag ggg gct tcg atg aag ctt aaa cca 302  
Ile Ala Ala Thr Val Thr Pro Lys Gly Ala Ser Met Lys Leu Lys Pro  
65 70 75

ccg cgt ccg cag tca acg aag tct ccg gag ctc agg gag ctg tca cgg 350  
Pro Arg Pro Gln Ser Thr Lys Ser Pro Glu Leu Arg Glu Leu Ser Arg  
80 85 90

aag att cgc gaa atg aat aag act ata agt cag gaa tca gct cgg gta 398  
Lys Ile Arg Glu Met Asn Lys Thr Ile Ser Gln Glu Ser Ala Arg Val  
95 100 105

aac cac cgg ttg ccg gaa ggc cac cct ctc tta gag aag cgg gca gaa 446  
Asn His Arg Leu Pro Glu Gly His Pro Leu Leu Glu Lys Arg Ala Glu  
110 115 120

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tat ttt cgt cac ctt aga tct ctt aag agc caa gga gtc aat aga ctc 494
Tyr Phe Arg His Leu Arg Ser Leu Lys Ser Gln Gly Val Asn Arg Leu
125          130          135          140

atc taa gaaggcacta cgtaggtacc gtgcctctat gaggaatacg aaccgactag 550
Ile

tgcacaatag acgaccagtt ctaccaaagg tagagcctga ctctaatacta ccattcggcc 610
agcgacggag tcgcatgaca acgtggaatc ttagaccacg ccggacgggt tatccgtcaa 670
atgggtacttt ggcagttacg gaactcctga tctcgattta tagatcaaac ttctacacct 730
tgaaggtggt cgaggaaggg agatgtacgt gctgcaacac ccataaggag caagctttgc 790
tactcctatc cggttacctc cagctatatc gtgcactgca ctcagttgga aggtctgtat 850
tcgtagaata ctgcaaaacc aggatatgcg tcgaggcacg cctcaccgga ctacgtccga 910
gggtgaccct aacgggctgc tgaactaggt tcagccagcg cttcctgtga gtatgtcatt 970
ccgggtcctt cggggcccg gccagtttcg actggtgtag gtttgcccta ctagagtact 1030
tgcgacgccg aagcgcctcc gttcaaaaga acgcgcaagc cctagcagag aaatgcgagg 1090
gcatgactct tcgagtcaaa aaaaaaaaaa aaaaaaaaaac tcgag 1135

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<210> 2  
 <211> 141  
 <212> PRT  
 <213> Babesia canis

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Thr Phe Gly Glu Thr Phe Asp Val Met Arg Glu Ala Leu Leu Arg Val
          20          25          30

Lys Ser Ser Glu Arg Leu Ala Met Leu Arg Ala Leu Ala Gly Met Cys
          35          40          45

Gly His Arg Val Leu Pro Gly Thr Gly Ala Ser Ala Ile Ala Ala Thr
          50          55          60

Val Thr Pro Lys Gly Ala Ser Met Lys Leu Lys Pro Pro Arg Pro Gln
          65          70          75          80

Ser Thr Lys Ser Pro Glu Leu Arg Glu Leu Ser Arg Lys Ile Arg Glu
          85          90          95

Met Asn Lys Thr Ile Ser Gln Glu Ser Ala Arg Val Asn His Arg Leu
          100          105          110

Pro Glu Gly His Pro Leu Leu Glu Lys Arg Ala Glu Tyr Phe Arg His
          115          120          125

Leu Arg Ser Leu Lys Ser Gln Gly Val Asn Arg Leu Ile
          130          135          140

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<210> 3  
 <211> 1134  
 <212> DNA  
 <213> Babesia canis

<220>  
 <221> CDS  
 <222> (75)..(929)

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                   Met Glu Ser Thr Ser Thr Thr Thr Asn Phe Val Ala  
                   1                  5                  10  
 gag aac cgt ccc acc ttt ggt gag acg ttt gat gtg atg agg gaa gct 158  
 Glu Asn Arg Pro Thr Phe Gly Glu Thr Phe Asp Val Met Arg Glu Ala  
                   15                  20                  25  
 ttg ctt cgt gta aag tcc tct gaa cgc ttg gca atg ctc aga gcg ctt 206  
 Leu Leu Arg Val Lys Ser Ser Glu Arg Leu Ala Met Leu Arg Ala Leu  
                   30                  35                  40  
 gca gga atg tgc ggt cac cgc gtc ctt cct ggc act ggt gct tct gcg 254  
 Ala Gly Met Cys Gly His Arg Val Leu Pro Gly Thr Gly Ala Ser Ala  
                   45                  50                  55                  60  
 ata gcg gca acg gta acc cca aag ggg gct tcg atg aag ctt aaa cca 302  
 Ile Ala Ala Thr Val Thr Pro Lys Gly Ala Ser Met Lys Leu Lys Pro  
                   65                  70                  75  
 ccg cgt ccg cag tca acg aag tct ccg gag ctc agg gag ctg tca cgg 350  
 Pro Arg Pro Gln Ser Thr Lys Ser Pro Glu Leu Arg Glu Leu Ser Arg  
                   80                  85                  90  
 aag att cgc gaa atg aat aag act ata agt cag gaa tca gct cgg gta 398  
 Lys Ile Arg Glu Met Asn Lys Thr Ile Ser Gln Glu Ser Ala Arg Val  
                   95                  100                  105  
 aac cac cgg ttg ccg gaa ggc cac cct ctc tta gag aag cgg gca gaa 446  
 Asn His Arg Leu Pro Glu Gly His Pro Leu Leu Glu Lys Arg Ala Glu  
                   110                  115                  120  
 tat ttc gtc acc tta gat ctc tta aga gcc aag gag tca ata gac tca 494  
 Tyr Phe Val Thr Leu Asp Leu Leu Arg Ala Lys Glu Ser Ile Asp Ser  
                   125                  130                  135                  140  
 tct aag aag gca cta cgt agg tac cgt gcc tct atg agg aat acg aac 542  
 Ser Lys Lys Ala Leu Arg Arg Tyr Arg Ala Ser Met Arg Asn Thr Asn  
                   145                  150                  155  
 cga cta gtg cac aat aga cga cca gtt cta cca aag gta gag cct gac 590  
 Arg Leu Val His Asn Arg Arg Pro Val Leu Pro Lys Val Glu Pro Asp  
                   160                  165                  170  
 tct aat cta cca ttc ggc cag cga cgg agt cgc atg aca acg tgg aat 638  
 Ser Asn Leu Pro Phe Gly Gln Arg Arg Ser Arg Met Thr Thr Trp Asn  
                   175                  180                  185  
 ctt aga cca cgc cgg acg ggt tat ccg tca aat ggt act ttg gca gtt 686  
 Leu Arg Pro Arg Arg Thr Gly Tyr Pro Ser Asn Gly Thr Leu Ala Val  
                   190                  195                  200

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acg gaa ctc ctg atc tcg att tat aga tca aac ttc tac acc ttg aag 734
Thr Glu Leu Leu Ile Ser Ile Tyr Arg Ser Asn Phe Tyr Thr Leu Lys
205 210 215 220

gtg gtc gag gaa ggg aga tgt acg tgc tgc aac acc cat aag gag caa 782
Val Val Glu Glu Gly Arg Cys Thr Cys Cys Asn Thr His Lys Glu Gln
225 230 235

gct ttg cta ctc cta tcc ggt tac ctc cag cta tat cgt gca ctg cac 830
Ala Leu Leu Leu Leu Ser Gly Tyr Leu Gln Leu Tyr Arg Ala Leu His
240 245 250

tca gtt gga agg tct gta ttc gta gaa tac tgc aaa acc agg ata tgc 878
Ser Val Gly Arg Ser Val Phe Val Glu Tyr Cys Lys Thr Arg Ile Cys
255 260 265

gtc gag gca cgc ctc acc gga cta cgt ccg agg gtg acc cta acg ggc 926
Val Glu Ala Arg Leu Thr Gly Leu Arg Pro Arg Val Thr Leu Thr Gly
270 275 280

tgc tgaactaggt tcagccagcg cttcctgtga gtatgtcatt ccgggtcctt 979
Cys
285

cggggcccgg gccagtttcg actggtgtag gtttgcccta ctagagtact tgcgacgccg 1039

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tcgagtcaaa aaaaaaaaaa aaaaaaaaaac tcgag 1134

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<210> 4
<211> 285
<212> PRT
<213> Babesia canis

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20 25 30

Lys Ser Ser Glu Arg Leu Ala Met Leu Arg Ala Leu Ala Gly Met Cys
35 40 45

Gly His Arg Val Leu Pro Gly Thr Gly Ala Ser Ala Ile Ala Ala Thr
50 55 60

Val Thr Pro Lys Gly Ala Ser Met Lys Leu Lys Pro Pro Arg Pro Gln
65 70 75 80

Ser Thr Lys Ser Pro Glu Leu Arg Glu Leu Ser Arg Lys Ile Arg Glu
85 90 95

Met Asn Lys Thr Ile Ser Gln Glu Ser Ala Arg Val Asn His Arg Leu
100 105 110

Pro Glu Gly His Pro Leu Leu Glu Lys Arg Ala Glu Tyr Phe Val Thr
115 120 125

Leu Asp Leu Leu Arg Ala Lys Glu Ser Ile Asp Ser Ser Lys Lys Ala

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# Substitute Seq Listing I- 2001.004 US

130

135

140

Leu	Arg	Arg	Tyr	Arg	Ala	Ser	Met	Arg	Asn	Thr	Asn	Arg	Leu	Val	His
145					150					155					160
Asn	Arg	Arg	Pro	Val	Leu	Pro	Lys	Val	Glu	Pro	Asp	Ser	Asn	Leu	Pro
				165					170					175	
Phe	Gly	Gln	Arg	Arg	Ser	Arg	Met	Thr	Thr	Trp	Asn	Leu	Arg	Pro	Arg
			180					185					190		
Arg	Thr	Gly	Tyr	Pro	Ser	Asn	Gly	Thr	Leu	Ala	Val	Thr	Glu	Leu	Leu
		195					200					205			
Ile	Ser	Ile	Tyr	Arg	Ser	Asn	Phe	Tyr	Thr	Leu	Lys	Val	Val	Glu	Glu
	210					215					220				
Gly	Arg	Cys	Thr	Cys	Cys	Asn	Thr	His	Lys	Glu	Gln	Ala	Leu	Leu	Leu
225					230					235					240
Leu	Ser	Gly	Tyr	Leu	Gln	Leu	Tyr	Arg	Ala	Leu	His	Ser	Val	Gly	Arg
				245					250					255	
Ser	Val	Phe	Val	Glu	Tyr	Cys	Lys	Thr	Arg	Ile	Cys	Val	Glu	Ala	Arg
			260					265					270		
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<210> 5

<211> 90

<212> DNA

<213> Babesia canis

<400> 5

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<210> 6

<211> 24

<212> DNA

<213> Babesia canis

<400> 6

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<210> 7

<211> 21

<212> DNA

<213> Babesia canis

<400> 7

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<210> 8

<211> 20

<212> DNA

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Substitute Seq Listing I- 2001.004 US

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<210> 15 <211> 20 <212> DNA <213> Babesia canis	
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<210> 16

<211> 88

<212> DNA

<213> Babesia canis

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<212> PRT

<213> Babesia canis

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